Particulate Matter (PM) Emission Calculations

Presented by: Evan Shaw

Mecklenburg County
Land Use and Environmental Services Agency
Air Quality Division

Helping you breathe easy... for life
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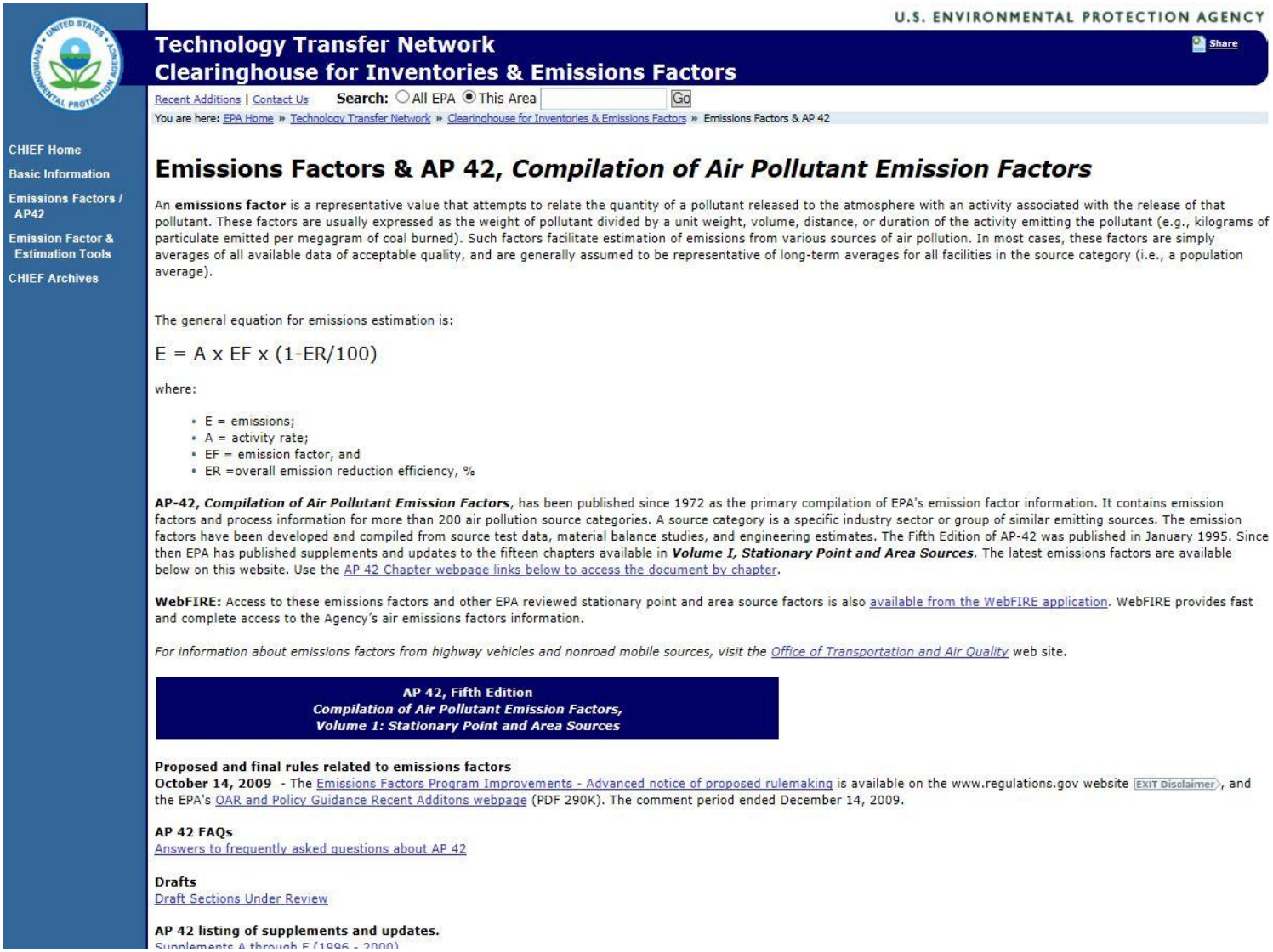
AP-42 Emission Factors

- A representative value that attempts to relate the quantity of a pollutant released to the atmosphere with an activity associated with the release of that pollutant.
- Emission factors provide emission estimates from various sources of air pollution.
- EPA AP-42 website (http://www.epa.gov/ttnchie1/ap42/)
- AP-42 has been published since 1972 as the primary compilation of EPA's emission factor information.

AP-42 Website



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Emissions Factors & AP 42, *Compilation of Air Pollutant Emission Factors*

An **emissions factor** is a representative value that attempts to relate the quantity of a pollutant released to the atmosphere with an activity associated with the release of that pollutant. These factors are usually expressed as the weight of pollutant divided by a unit weight, volume, distance, or duration of the activity emitting the pollutant (e.g., kilograms of particulate emitted per megagram of coal burned). Such factors facilitate estimation of emissions from various sources of air pollution. In most cases, these factors are simply averages of all available data of acceptable quality, and are generally assumed to be representative of long-term averages for all facilities in the source category (i.e., a population average).

The general equation for emissions estimation is:

$$E = A \times EF \times (1-ER/100)$$

where:

- E = emissions;
- A = activity rate;
- EF = emission factor, and
- ER =overall emission reduction efficiency, %

AP-42, *Compilation of Air Pollutant Emission Factors*, has been published since 1972 as the primary compilation of EPA's emission factor information. It contains emission factors and process information for more than 200 air pollution source categories. A source category is a specific industry sector or group of similar emitting sources. The emission factors have been developed and compiled from source test data, material balance studies, and engineering estimates. The Fifth Edition of AP-42 was published in January 1995. Since then EPA has published supplements and updates to the fifteen chapters available in ***Volume I, Stationary Point and Area Sources***. The latest emissions factors are available below on this website. Use the AP 42 Chapter webpage links below to access the document by chapter.

WebFIRE: Access to these emissions factors and other EPA reviewed stationary point and area source factors is also available from the WebFIRE application. WebFIRE provides fast and complete access to the Agency's air emissions factors information.

For information about emissions factors from highway vehicles and nonroad mobile sources, visit the Office of Transportation and Air Quality web site.

AP 42, Fifth Edition
Compilation of Air Pollutant Emission Factors,
Volume 1: Stationary Point and Area Sources

Proposed and final rules related to emissions factors
October 14, 2009 - The Emissions Factors Program Improvements - Advanced notice of proposed rulemaking is available on the www.regulations.gov website EXIT Disclaimer, and the EPA's OAR and Policy Guidance Recent Additons webpage (PDF 290K). The comment period ended December 14, 2009.

AP 42 FAQs
Answers to frequently asked questions about AP 42

Drafts
Draft Sections Under Review

AP 42 listing of supplements and updates.
Supplements A through E (1996 - 2000)

AP-42 Emission Factor Categories

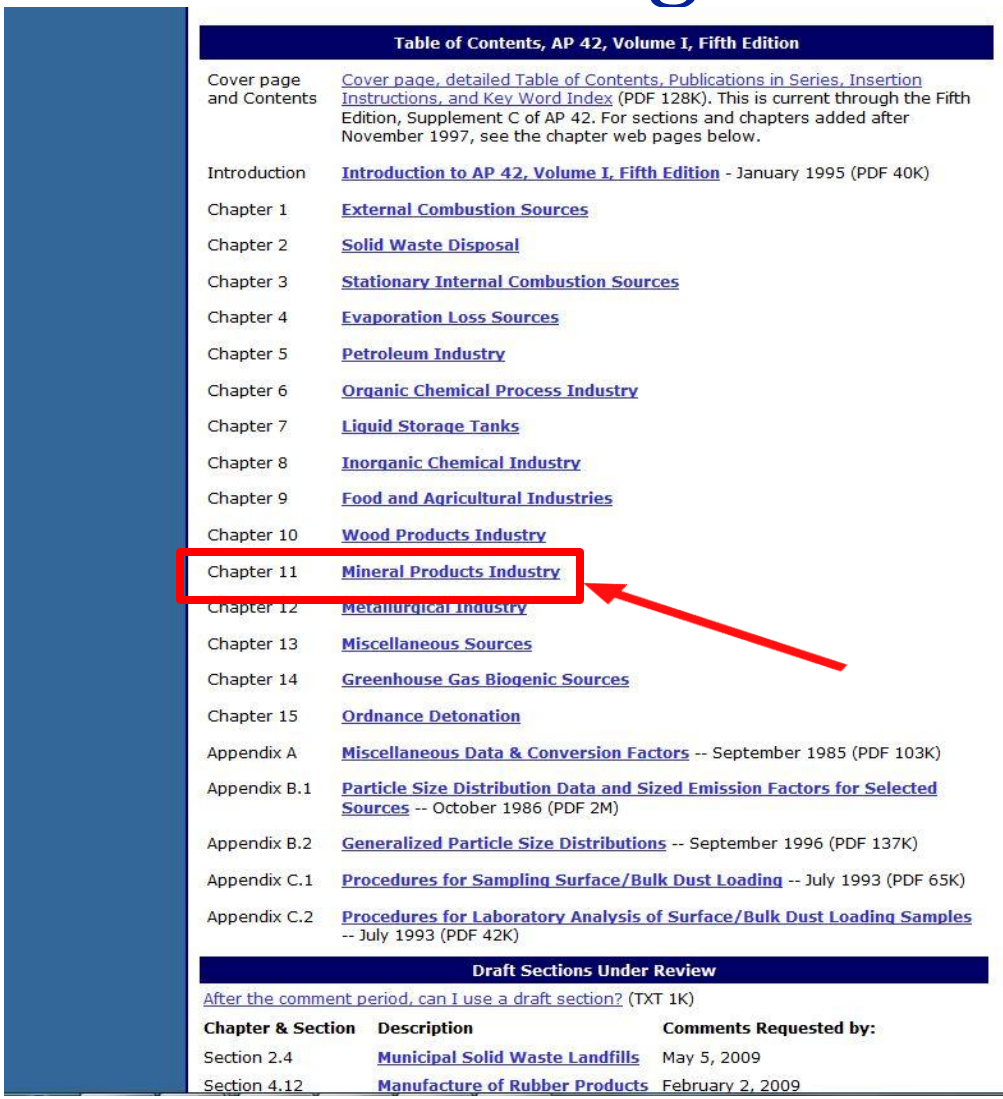

Table of Contents, AP 42, Volume I, Fifth Edition

Cover page and Contents	Cover page, detailed Table of Contents, Publications in Series, Insertion Instructions, and Key Word Index (PDF 128K). This is current through the Fifth Edition, Supplement C of AP 42. For sections and chapters added after November 1997, see the chapter web pages below.
Introduction	**Introduction to AP 42, Volume I, Fifth Edition** - January 1995 (PDF 40K)
Chapter 1	**External Combustion Sources**
Chapter 2	**Solid Waste Disposal**
Chapter 3	**Stationary Internal Combustion Sources**
Chapter 4	**Evaporation Loss Sources**
Chapter 5	**Petroleum Industry**
Chapter 6	**Organic Chemical Process Industry**
Chapter 7	**Liquid Storage Tanks**
Chapter 8	**Inorganic Chemical Industry**
Chapter 9	**Food and Agricultural Industries**
Chapter 10	**Wood Products Industry**
Chapter 11	**Mineral Products Industry**
Chapter 12	**Metallurgical Industry**
Chapter 13	**Miscellaneous Sources**
Chapter 14	**Greenhouse Gas Biogenic Sources**
Chapter 15	**Ordnance Detonation**
Appendix A	**Miscellaneous Data & Conversion Factors** -- September 1985 (PDF 103K)
Appendix B.1	**Particle Size Distribution Data and Sized Emission Factors for Selected Sources** -- October 1986 (PDF 2M)
Appendix B.2	**Generalized Particle Size Distributions** -- September 1996 (PDF 137K)
Appendix C.1	**Procedures for Sampling Surface/Bulk Dust Loading** -- July 1993 (PDF 65K)
Appendix C.2	**Procedures for Laboratory Analysis of Surface/Bulk Dust Loading Samples** -- July 1993 (PDF 42K)

Draft Sections Under Review

After the comment period, can I use a draft section? (TXT 1K)

Chapter & Section	Description	Comments Requested by:
Section 2.4	**Municipal Solid Waste Landfills**	May 5, 2009
Section 4.12	**Manufacture of Rubber Products**	February 2, 2009

AP-42 Mineral Industry Products Section

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AP 42, Fifth Edition, Volume I
Chapter 11: Mineral Products Industry

11.0	Introduction to Mineral Products Industry
11.1	**Hot Mix Asphalt Plants** • Final Section (PDF 475K) - Update 2004, April 2004 • Background Document (PDF 2M) • Related Information
11.2	**Asphalt Roofing** • Final Section - January 1995 (PDF 255K) • Background Document (PDF 218K)
11.3	**Bricks and Related Clay Products** • Final Section - Supplement C, August 1997 (PDF 147K) • Background Document (PDF 571K)
11.4	**Calcium Carbide Manufacturing** • Final Section - January 1995 (PDF 66K) • Background Document (PDF 86K)
11.5	**Refractory Manufacturing** • Final Section - January 1995 (PDF 39K) • Background Document (PDF 124K)
11.6	**Portland Cement Manufacturing** • Final Section - January 1995 (PDF 113K) • Background Document (PDF 276K) • Related Information
11.7	**Ceramic Clay Manufacturing** • Final Section - Supplement B, July 1996 (PDF 105K) • Background Document (PDF 2.2M) • Related Information
11.8	**Clay and Fly Ash Sintering** • Final Section - February 1972 (PDF 17K)

AP-42 Crushed Stone Processing Factors

11.18 Mineral Wool Manufacturing

- Final Section - July 1993 (PDF 36K)
- Errata - January 3, 2007: Table 11.18-4 has been updated. The sulfur dioxide emission factor was shown as 0.087 lb/ton of total feed charged. The conversion was incorrect. The factor was corrected to 0.87 lb/ton.
- Background Document (PDF 128K)

11.19 Introduction to Construction and Aggregate Processing

- Final Section - September 1985 (PDF 4K)

11.19.1 Sand & Gravel Processing

- Final Section - Supplement A, November 1995 (PDF 61K)
- Background Document (PDF 1.0M)
- Related Information

11.19.2 Crushed Stone Processing and Pulverized Mineral Processing

- Final Section - Update 2004, August 2004 (PDF 63K)
- Related Information to Final Section
- Background Document (PDF 700K)

11.20 Lightweight Aggregate

- Final Section - July 1993 (PDF 45K)
- Background Document (PDF 238K)

11.21 Phosphate Rock Processing

- Final Section - July 1993 (PDF 83K)
- Background Document (PDF 208K)

11.22 Diatomite Processing

- Final Section - Supplement A, November 1995 (PDF 38K)
- Background Document (PDF 47K)

11.23 Taconite Ore Processing

- Final Section - Supplement C, February 1997 (PDF 94K)
- Background Document (PDF 388K)
- Related Information

11.24 Metallic Minerals Processing

- Final Section - August 1982 (PDF 60K)

11.25 Clay Processing

- Final Section - January 1995 (PDF 627K)
- Background Document (PDF 3M)

11.26 Talc Processing

- Final Section - Supplement A, November 1995 (PDF 105K)

AP-42 Crushed Stone Processing Factors

11.19.2 Crushed Stone Processing and Pulverized Mineral Processing

11.19.2.1 Process Description [24, 25]

Crushed Stone Processing

Major rock types processed by the crushed stone industry include limestone, granite, dolomite, traprock, sandstone, quartz, and quartzite. Minor types include calcareous marl, marble, shell, and slate. Major mineral types processed by the pulverized minerals industry, a subset of the crushed stone processing industry, include calcium carbonate, talc, and barite. Industry classifications vary considerably and, in many cases, do not reflect actual geological definitions.

Rock and crushed stone products generally are loosened by drilling and blasting and then are loaded by power shovel or front-end loader into large haul trucks that transport the material to the processing operations. Techniques used for extraction vary with the nature and location of the deposit. Processing operations may include crushing, screening, size classification, material handling and storage operations. All of these processes can be significant sources of PM and PM-10 emissions if uncontrolled.

Quarried stone normally is delivered to the processing plant by truck and is dumped into a bin. A feeder is used as illustrated in Figure 11.19.2-1. The feeder or screens separate large boulders from finer rocks that do not require primary crushing, thus reducing the load to the primary crusher. Jaw, impactor, or gyratory crushers are usually used for initial reduction. The crusher product, normally 7.5 to 30 centimeters (3 to 12 inches) in diameter, and the grizzly throughs (undersize material) are discharged onto a belt conveyor and usually are conveyed to a surge pile for temporary storage or are sold as coarse aggregates.

The stone from the surge pile is conveyed to a vibrating inclined screen called the scalping screen. This unit separates oversized rock from the smaller stone. The undersized material from the scalping screen is considered to be a product stream and is transported to a

AP-42 Crushed Stone Processing Factors

Table 11.19.2-1 (Metric Units). EMISSION FACTORS FOR CRUSHED STONE PROCESSING OPERATIONS (kg/Mg)[a]

Source [b]	Total Particulate Matter [r,s]	EMISSION FACTOR RATING	Total PM-10	EMISSION FACTOR RATING	Total PM-2.5	EMISSION FACTOR RATING
Primary Crushing (SCC 3-05-020-01)	ND		ND[n]		ND[n]	
Primary Crushing (controlled) (SCC 3-05-020-01)	ND		ND[n]		ND[n]	
Secondary Crushing (SCC 3-05-020-02)	ND		ND[n]		ND[n]	
Secondary Crushing (controlled) (SCC 3-05-020-02)	ND		ND[n]		ND[n]	
Tertiary Crushing (SCC 3-050030-03)	0.0027[d]	E	0.0012[o]	C	ND[n]	
Tertiary Crushing (controlled) (SCC 3-05-020-03)	0.0006[d]	E	0.00027[p]	C	0.00005[q]	E
Fines Crushing (SCC 3-05-020-05)	0.0195[e]	E	0.0075[e]	E	ND	
Fines Crushing (controlled) (SCC 3-05-020-05)	0.0015[f]	E	0.0006[f]	E	0.000035[q]	E
Screening (SCC 3-05-020-02, 03)	0.0125[c]	E	0.0043[l]	C	ND	
Screening (controlled) (SCC 3-05-020-02, 03)	0.0011[d]	E	0.00037[m]	C	0.000025[q]	E
Fines Screening (SCC 3-05-020-21	0.15[g]	E	0.036[g]	E	ND	
Fines Screening (controlled) (SCC 3-05-020-21)	0.0018[g]	E	0.0011[g]	E	ND	
Conveyor Transfer Point (SCC 3-05-020-06)	0.0015[h]	E	0.00055[h]	D	ND	
Conveyor Transfer Point (controlled) (SCC 3-05-020-06)	0.00007[i]	E	2.3×10^{-5}[i]	D	6.5×10^{-6}[q]	E
Wet Drilling - Unfragmented Stone (SCC 3-05-020-10)	ND		4.0×10^{-5}[j]	E	ND	
Truck Unloading - Fragmented Stone (SCC 3-05-020-31)	ND		8.0×10^{-6}[j]	E	ND	
Truck Loading - Conveyor, crushed stone (SCC 3-05-020-32)	ND		5.0×10^{-5}[k]	E	ND	

AP-42 Crushed Stone Processing Factors

Table 11.19.2-2 (English Units). EMISSION FACTORS FOR CRUSHED STONE PROCESSING OPERATIONS (lb/Ton)[a]

Source [b]	Total Particulate Matter [r,s]	EMISSION FACTOR RATING	Total PM-10	EMISSION FACTOR RATING	Total PM-2.5	EMISSION FACTOR RATING
Primary Crushing (SCC 3-05-020-01)	ND		ND[n]		ND[n]	
Primary Crushing (controlled) (SCC 3-05-020-01)	ND		ND[n]		ND[n]	
Secondary Crushing (SCC 3-05-020-02)	ND		ND[n]		ND[n]	
Secondary Crushing (controlled) (SCC 3-05-020-02)	ND		ND[n]		ND[n]	
Tertiary Crushing (SCC 3-050030-03)	0.0054[d]	E	0.0024[o]	C	ND[n]	
Tertiary Crushing (controlled) (SCC 3-05-020-03)	0.0012[d]	E	0.00054[p]	C	0.00010[q]	E
Fines Crushing (SCC 3-05-020-05)	0.0390[e]	E	0.0150[e]	E	ND	
Fines Crushing (controlled) (SCC 3-05-020-05)	0.0030[f]	E	0.0012[f]	E	0.000070[q]	E
Screening (SCC 3-05-020-02, 03)	0.025[c]	E	0.0087[l]	C	ND	
Screening (controlled) (SCC 3-05-020-02, 03)	0.0022[d]	E	0.00074[m]	C	0.000050[q]	E
Fines Screening (SCC 3-05-020-21)	0.30[g]	E	0.072[g]	E	ND	
Fines Screening (controlled) (SCC 3-05-020-21)	0.0036[g]	E	0.0022[g]	E	ND	
Conveyor Transfer Point (SCC 3-05-020-06)	0.0030[h]	E	0.00110[h]	D	ND	
Conveyor Transfer Point (controlled) (SCC 3-05-020-06)	0.00014[i]	E	4.6×10^{-5}[i]	D	1.3×10^{-5}[q]	E
Wet Drilling - Unfragmented Stone (SCC 3-05-020-10)	ND		8.0×10^{-5}[j]	E	ND	
Truck Unloading -Fragmented Stone (SCC 3-05-020-31)	ND		1.6×10^{-5}[j]	E	ND	
Truck Loading - Conveyor, crushed stone (SCC 3-05-020-32)	ND		0.00010[k]	E	ND	

AP-42 Crushed Stone Processing Factors

Table 11.19.2-2 (English Units). EMISSION FACTORS FOR CRUSHED STONE PROCESSING OPERATIONS (lb/Ton)[a]

Source [b]	Total Particulate Matter [r,s]	EMISSION FACTOR RATING	Total PM-10	EMISSION FACTOR RATING	Total PM-2.5	EMISSION FACTOR RATING
Primary Crushing (SCC 3-05-020-01)	ND		ND[n]		ND[n]	
Primary Crushing (controlled) (SCC 3-05-020-01)	ND		ND[n]		ND[n]	
Secondary Crushing (SCC 3-05-020-02)	ND		ND[n]		ND[n]	
Secondary Crushing (controlled) (SCC 3-05-020-02)	ND		ND[n]		ND[n]	
Tertiary Crushing (SCC 3-050030-03)	0.0054[d]	E	0.0024[o]	C	ND[n]	
Tertiary Crushing (controlled) (SCC 3-05-020-03)	0.0012[d]	E	0.00054[p]	C	0.00010[q]	E
Fines Crushing (SCC 3-05-020-05)	0.0390[e]	E	0.0150[e]	E	ND	
Fines Crushing (controlled) (SCC 3-05-020-05)	0.0030[f]	E	0.0012[f]	E	0.000070[q]	E
Screening (SCC 3-05-020-02, 03)	0.025[c]	E	0.0087[l]	C	ND	
Screening (controlled) (SCC 3-05-020-02, 03)	0.0022[d]	E	0.00074[m]	C	0.000050[q]	E
Fines Screening (SCC 3-05-020-21)	0.30[f]	E	0.072[g]	E	ND	
Fines Screening (controlled) (SCC 3-05-020-21)	0.0036[g]	E	0.0022[g]	E	ND	
Conveyor Transfer Point (SCC 3-05-020-06)	0.0030[h]	E	0.00110[h]	D	ND	
Conveyor Transfer Point (controlled) (SCC 3-05-020-06)	0.00014[i]	E	4.6×10^{-5}[i]	D	1.3×10^{-5}[q]	E
Wet Drilling - Unfragmented Stone (SCC 3-05-020-10)	ND		8.0×10^{-5}[j]	E	ND	
Truck Unloading -Fragmented Stone (SCC 3-05-020-31)	ND		1.6×10^{-5}[j]	E	ND	

Crushed Stone Screening

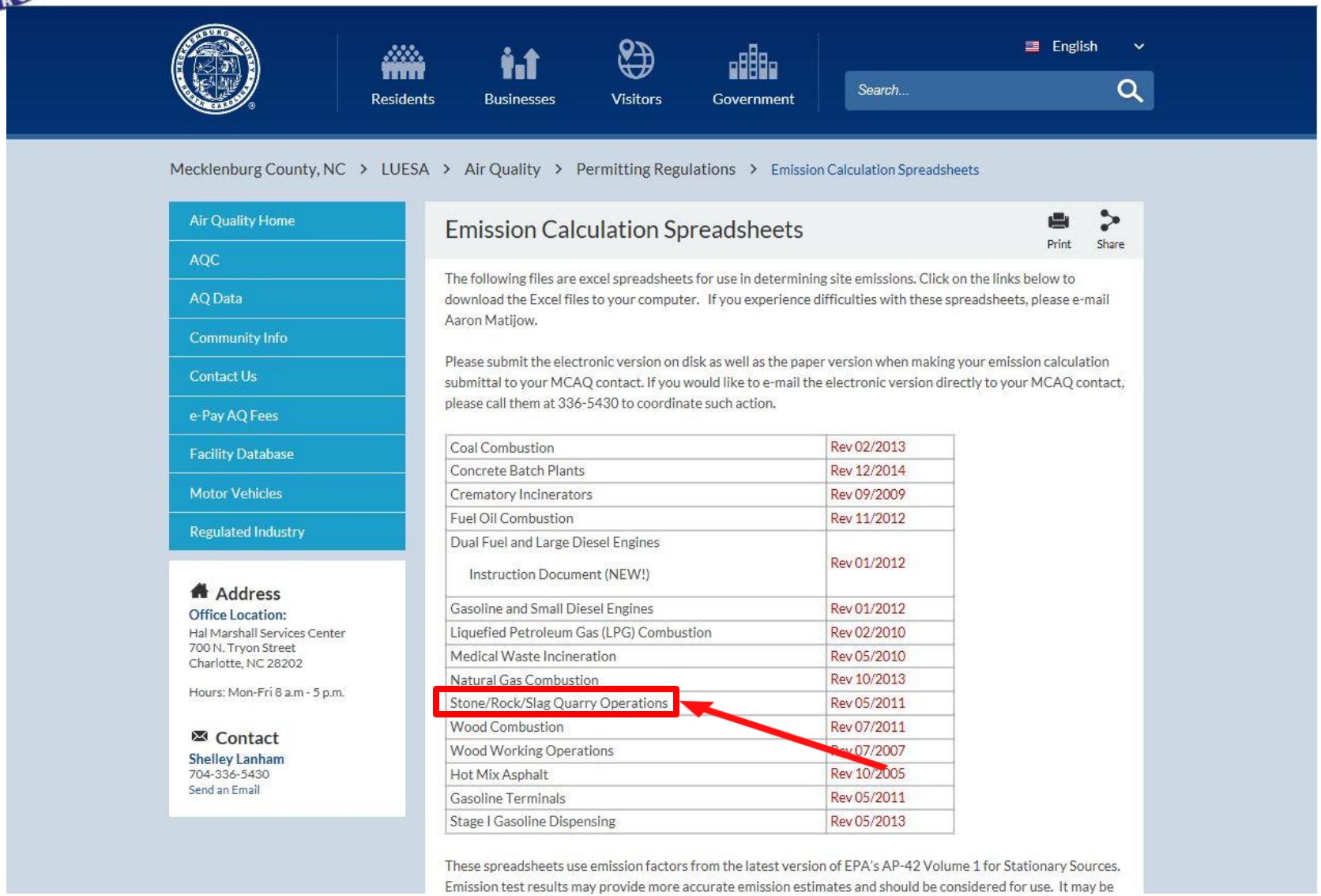
Example: Screening Emission Calculation Using AP-42 Emission Factor

- **<u>PM Actual Screening Emissions</u>**
- Amount of product run through the screen for the year: 150,000 tons/yr
- Emisisons Rate for screening (controlled with wet suppression): 0.0022 lb/ton PM
- 150,000 ton/yr **x** 0.0022 lb/ton = 330 lb/yr
- 330 lb/yr **/** 2000 lb/ton = **0.165 ton/yr PM emissions**

Emission Spreadsheets Incorporate Emission Factors

- Or…You can let the spreadsheets do the work for you
- The spreadsheets have AP-42 emission factors incorporated into them
- Emission Spreadsheets located on our website for your use
- http://airquality.charmeck.org

MCAQ Website



Residents Businesses Visitors Government English Search...

Mecklenburg County, NC > LUESA > Air Quality > Permitting Regulations > Emission Calculation Spreadsheets

- Air Quality Home
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- e-Pay AQ Fees
- Facility Database
- Motor Vehicles
- Regulated Industry

Address
Office Location:
Hal Marshall Services Center
700 N. Tryon Street
Charlotte, NC 28202

Hours: Mon-Fri 8 a.m - 5 p.m.

Contact
Shelley Lanham
704-336-5430
Send an Email

Emission Calculation Spreadsheets

Print Share

The following files are excel spreadsheets for use in determining site emissions. Click on the links below to download the Excel files to your computer. If you experience difficulties with these spreadsheets, please e-mail Aaron Matijow.

Please submit the electronic version on disk as well as the paper version when making your emission calculation submittal to your MCAQ contact. If you would like to e-mail the electronic version directly to your MCAQ contact, please call them at 336-5430 to coordinate such action.

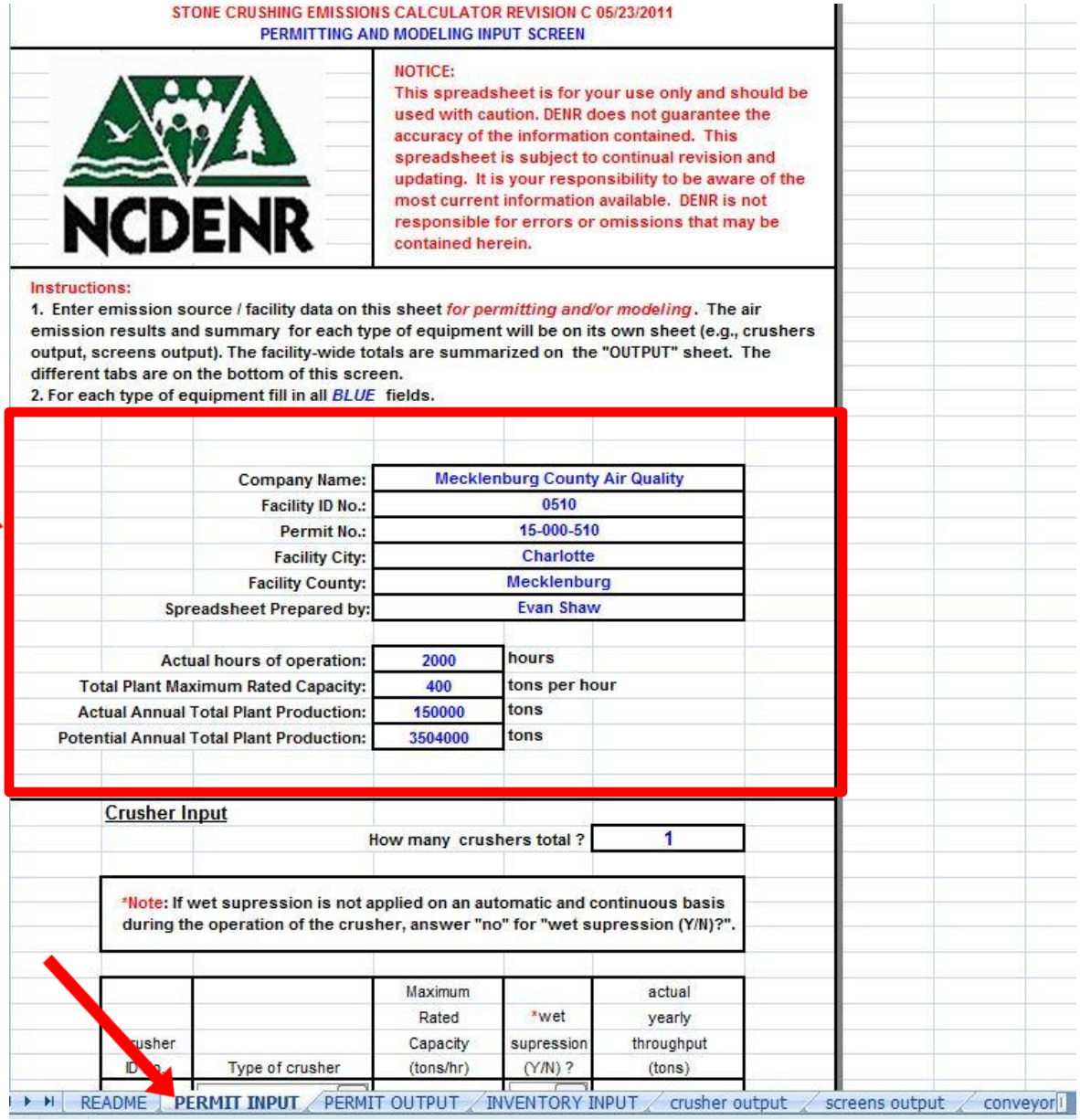
Coal Combustion	Rev 02/2013
Concrete Batch Plants	Rev 12/2014
Crematory Incinerators	Rev 09/2009
Fuel Oil Combustion	Rev 11/2012
Dual Fuel and Large Diesel Engines Instruction Document (NEW!)	Rev 01/2012
Gasoline and Small Diesel Engines	Rev 01/2012
Liquefied Petroleum Gas (LPG) Combustion	Rev 02/2010
Medical Waste Incineration	Rev 05/2010
Natural Gas Combustion	Rev 10/2013
Stone/Rock/Slag Quarry Operations	Rev 05/2011
Wood Combustion	Rev 07/2011
Wood Working Operations	Rev 07/2007
Hot Mix Asphalt	Rev 10/2005
Gasoline Terminals	Rev 05/2011
Stage I Gasoline Dispensing	Rev 05/2013

These spreadsheets use emission factors from the latest version of EPA's AP-42 Volume 1 for Stationary Sources. Emission test results may provide more accurate emission estimates and should be considered for use. It may be

Stone Crushing Spreadsheet

Input General Information

Note the tabs on the bottom of the spreadsheet



STONE CRUSHING EMISSIONS CALCULATOR REVISION C 05/23/2011
PERMITTING AND MODELING INPUT SCREEN

NCDENR

NOTICE:
This spreadsheet is for your use only and should be used with caution. DENR does not guarantee the accuracy of the information contained. This spreadsheet is subject to continual revision and updating. It is your responsibility to be aware of the most current information available. DENR is not responsible for errors or omissions that may be contained herein.

Instructions:
1. Enter emission source / facility data on this sheet *for permitting and/or modeling*. The air emission results and summary for each type of equipment will be on its own sheet (e.g., crushers output, screens output). The facility-wide totals are summarized on the "OUTPUT" sheet. The different tabs are on the bottom of this screen.
2. For each type of equipment fill in all *BLUE* fields.

Company Name:	Mecklenburg County Air Quality
Facility ID No.:	0510
Permit No.:	15-000-510
Facility City:	Charlotte
Facility County:	Mecklenburg
Spreadsheet Prepared by:	Evan Shaw

Actual hours of operation:	2000	hours
Total Plant Maximum Rated Capacity:	400	tons per hour
Actual Annual Total Plant Production:	150000	tons
Potential Annual Total Plant Production:	3504000	tons

Crusher Input

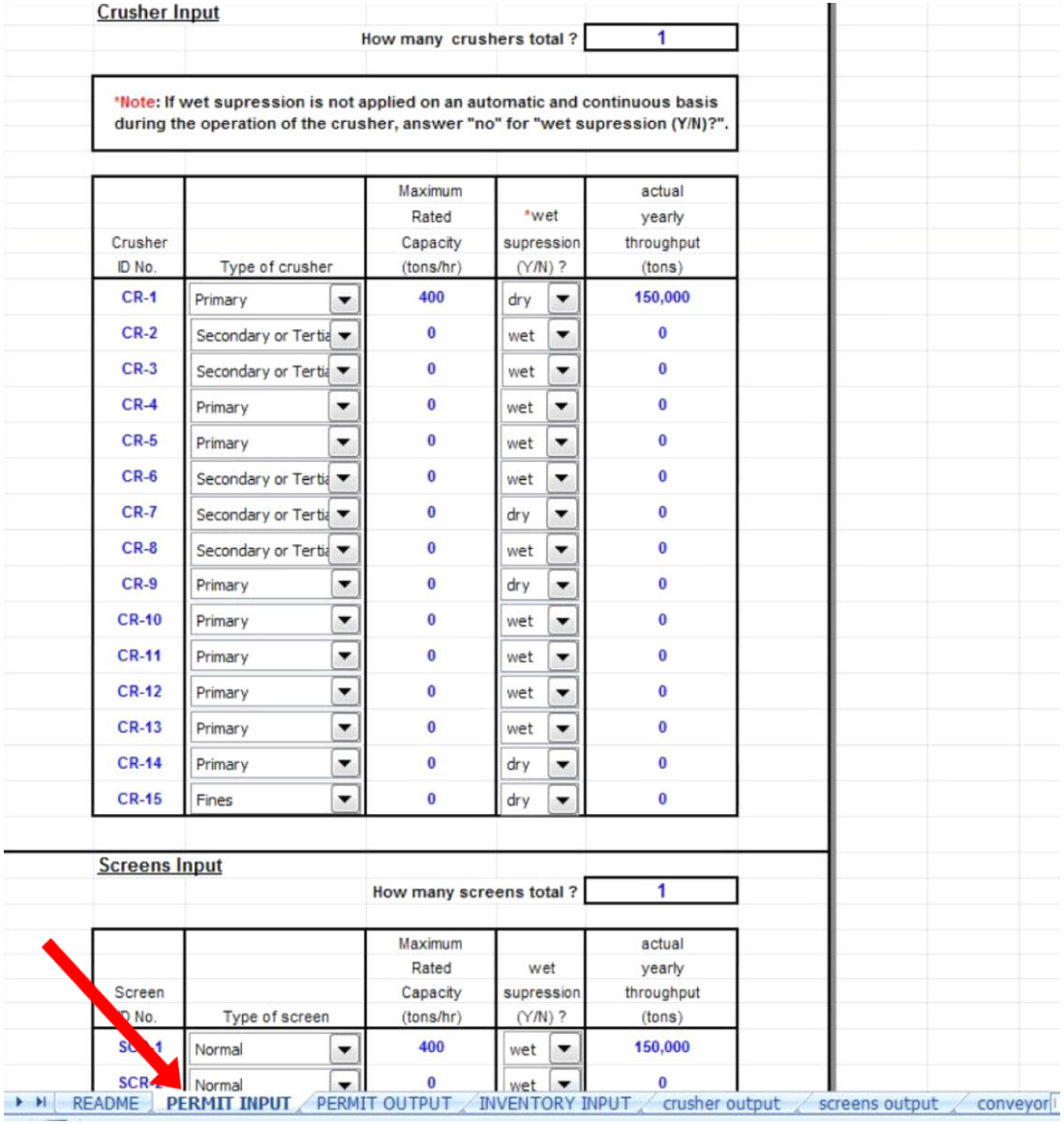
How many crushers total ? 1

*Note: If wet supression is not applied on an automatic and continuous basis during the operation of the crusher, answer "no" for "wet supression (Y/N)?".

Crusher ID	Type of crusher	Maximum Rated Capacity (tons/hr)	*wet supression (Y/N) ?	actual yearly throughput (tons)

README | PERMIT INPUT | PERMIT OUTPUT | INVENTORY INPUT | crusher output | screens output | conveyor

Stone Crushing Spreadsheet Input Tab



Crusher Input

How many crushers total ? 1

*Note: If wet supression is not applied on an automatic and continuous basis during the operation of the crusher, answer "no" for "wet supression (Y/N)?".

Crusher ID No.	Type of crusher	Maximum Rated Capacity (tons/hr)	*wet supression (Y/N) ?	actual yearly throughput (tons)
CR-1	Primary	400	dry	150,000
CR-2	Secondary or Tertia	0	wet	0
CR-3	Secondary or Tertia	0	wet	0
CR-4	Primary	0	wet	0
CR-5	Primary	0	wet	0
CR-6	Secondary or Tertia	0	wet	0
CR-7	Secondary or Tertia	0	dry	0
CR-8	Secondary or Tertia	0	wet	0
CR-9	Primary	0	dry	0
CR-10	Primary	0	wet	0
CR-11	Primary	0	wet	0
CR-12	Primary	0	wet	0
CR-13	Primary	0	wet	0
CR-14	Primary	0	dry	0
CR-15	Fines	0	dry	0

Screens Input

How many screens total ? 1

Screen ID No.	Type of screen	Maximum Rated Capacity (tons/hr)	wet supression (Y/N) ?	actual yearly throughput (tons)
SCR-1	Normal	400	wet	150,000
SCR-2	Normal	0	wet	0

README | PERMIT INPUT | PERMIT OUTPUT | INVENTORY INPUT | crusher output | screens output | conveyor

Stone Crushing Spreadsheet Screens Input

Screens Input

How many screens total ? 1

Screen ID No.	Type of screen	Maximum Rated Capacity (tons/hr)	wet supression (Y/N) ?	actual yearly throughput (tons)
SCR-1	Normal	400	wet	150,000
SCR-2	Normal	0	wet	0
SCR-3	Normal	0	wet	0
SCR-4	Normal	0	wet	0
SCR-5	Normal	0	wet	0
SCR-6	Normal	0	wet	0
SCR-7	Normal	0	wet	0
SCR-8	Normal	0	wet	0
SCR-9	Normal	0	wet	0
SCR-10	Normal	0	wet	0
SCR-11	Normal	0	wet	0
SCR-12	Normal	0	wet	0
SCR-13	Normal	0	wet	0
SCR-14	Normal	0	wet	0
SCR-15	Normal	0	wet	0

Stone Crushing Spreadsheet Screens Input

CR-11	Primary	0	wet	0
CR-12	Primary	0	wet	0
CR-13	Primary	0	wet	0
CR-14	Primary	0	dry	0
CR-15	Fines	0	dry	0

Screens Input

How many screens total ? 1

Screen ID No.	Type of screen	Maximum Rated Capacity (tons/hr)	wet supression (Y/N) ?	actual yearly throughput (tons)
SCR-1	Normal	400	wet	150,000
SCR-2	Normal	0	wet	0
SCR-3	Normal	0	wet	0
SCR-4	Normal	0	wet	0
SCR-5	Normal	0	wet	0
SCR-6	Normal	0	wet	0
SCR-7	Normal	0	wet	0
SCR-8	Normal	0	wet	0
SCR-9	Normal	0	wet	0
SCR-10	Normal	0	wet	0
SCR-11	Normal	0	wet	0
SCR-12	Normal	0	wet	0
SCR-13	Normal	0	wet	0
SCR-14	Normal	0	wet	0
SCR-15	Normal	0	wet	0

Conveyor Input

How many conveyors total ? 25

README | PERMIT INPUT | PERMIT OUTPUT | INVENTORY INPUT | crusher output | screens output | conveyor

Stone Crushing Spreadsheet Screens Output

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1	**Screens Calculations and Output**													
2														
3	Company Name:	Mecklenburg County Air Quality			0.88	0.30	0.02		3.85	1.30	0.09		0.17	0.06
4	Facility ID No.:	0510												
5	Permit No.:	15-000-510			hourly potential	hourly potential	hourly potential		yearly potential	yearly potential	yearly potential		yearly actual	yearly actual
6	Facility City:	Charlotte			TSP emissions	PM_{10} emissions	PM_{10} emissions		TSP emissions	PM_{10} emissions	PM2.5 emissions		TSP emissions	PM_{10} emissions
7	Facility County:	Mecklenburg			(lb/hr)	(lb/hr)	(lb/hr)		(tpy)	(tpy)	(tpy)		(tpy)	(tpy)
9	Normal Screen ID No. SCR-1 with wet supression													
10	Maximum Rated Capacity		400	tons/hour	0.88	0.296	0.02		3.8544	1.29648	0.0876		0.165	0.0555
11	Actual annual throughput		150,000	tons										

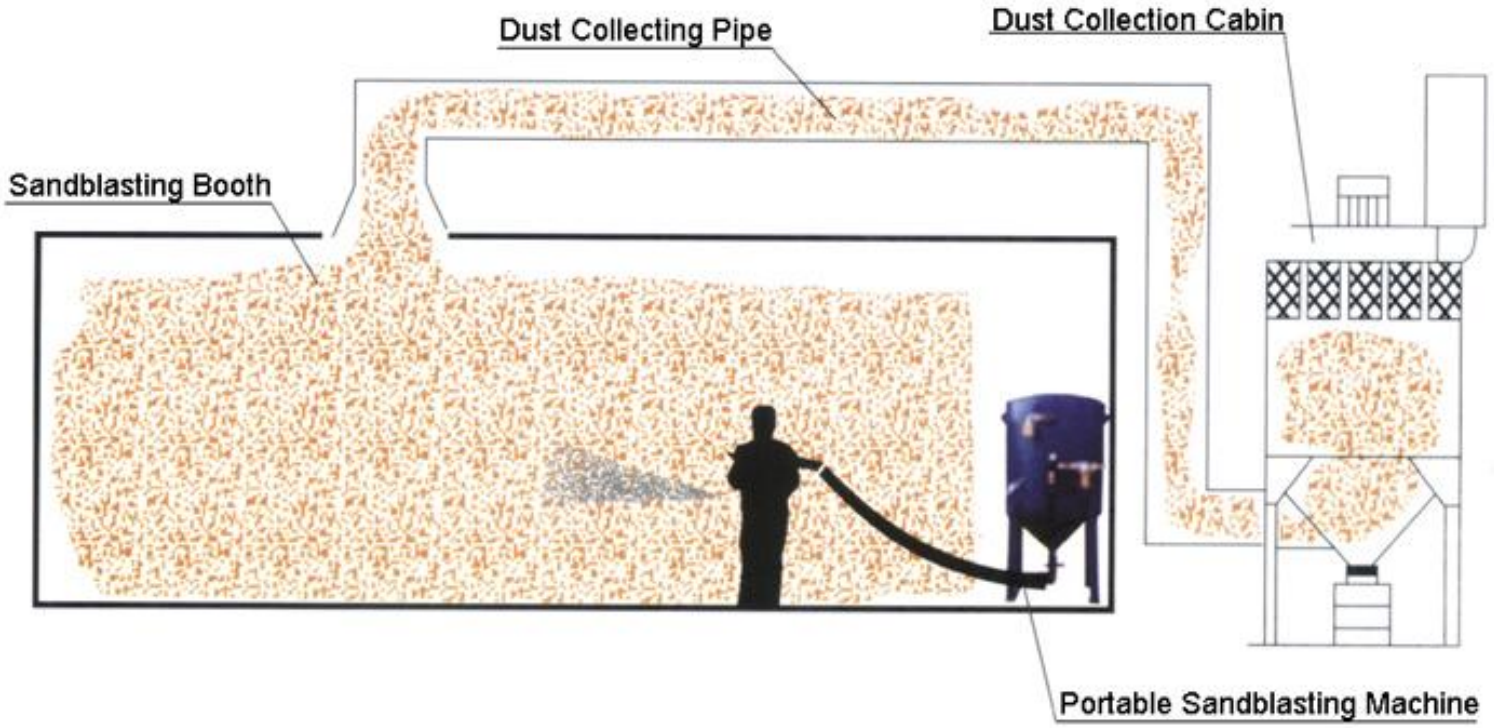
Stone Crushing Spreadsheet Screens Output

0.30	0.02	3.85	1.30	0.09	0.17	0.06	0.00			
hourly potential PM_{10} emissions (lb/hr)	hourly potential PM_{10} emissions (lb/hr)	yearly potential TSP emissions (tpy)	yearly potential PM_{10} emissions (tpy)	yearly potential PM2.5 emissions (tpy)	yearly actual TSP emissions (tpy)	yearly actual PM_{10} emissions (tpy)	yearly actual PM2.5 emissions (tpy)	TSP emission factor (lb/ton)	PM_{10} emission factor (lb/ton)	PM2.5 emission factor (lb/ton)
0.296	0.02	3.8544	1.29648	0.0876	0.165	0.0555	0.00375	0.0022	0.00074	0.00005

Actual TSP Emissions = 0.165 tpy

TSP controlled screening emission factor: 0.0022 lb/ton

Abrasive Blast Booth Emission Calculation



Abrasive Blast Booth Emission Calculation Example

- **PM Potential Uncontrolled Emissions Example 1**
- Potential rate for abrasive blast nozzle as provided by facility (manufacturer specifications): 1200 lb/hr
- Potential hours of operation: 24 hr/day, 365 days/yr = 8760 hr/yr (unless physical process limits or bottlenecks that would decrease the number of operating hours)
- If 1/3 of the abrasive coming out of the nozzle inside the booth is exhausted to the dust collector (the other 2/3 drops to the floor in the booth):
- 1200 lb/hr **x** 8760 hour/yr **/** 2000 lb/ton **x** 0.3= **1576.8 ton/yr potential PM emissions**

Abrasive Blast Booth Emission Calculation Example

- **PM Potential Uncontrolled Emissions Example 2**
- Potential rate for abrasive blast nozzle as provided by facility (manufacturer specifications): 800 lb/hr
- Physical operational limitation that only allows 1 part to be blasted each day because of the time it takes to prepare/blast/finish the bulk product. Blasting of product will not exceed 4 hour/day.
- 4 hr/day = 1460 hr/yr
- If 1/3 of the abrasive coming out of the nozzle inside the booth is exhausted to the dust collector:
- 800 lb/hr **x** 1460 hour/yr **/** 2000 lb/ton **x** 0.3= **175.2 ton/yr potential PM emissions**

Abrasive Blast Booth Emission Calculation Example

- **PM Actual Controlled Emissions Example**
- Removal efficiency of dust collector is 99% as provided by manufacturer testing specifications on dust collector
- Total weight of material processed through the booth in a year: 1000 tons/yr
- If 1/3 of the abrasive coming out of the nozzle inside the booth is exhausted to the dust collector:
- 1000 tons **x** 0.3 **x** (1 – 0.99) = **3 tons/yr actual PM emissions**

Questions?